

### **REMARKS**

Applicants acknowledge receipt of the nonfinal *Office Action* of September 12, 2008, in which the Examiner (1) rejected claims 1 to 20 under 35 U.S.C. §112, second paragraph, believing them to be indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention; (2) rejected claim 9 under 35 U.S.C. § 112, first paragraph, believing it to fail the enablement requirement; (3) rejected claims 1 and 4 under 35 U.S.C. §102(b) believing them to be anticipated by Eliasson et al. (U.S. Patent No. 6,284,157) (*Eliasson*); (4) rejected claims 2, 3, 5-8, and 10-20 under 35 U.S.C. § 103(a) believing them to be unpatentable over *Eliasson*; (5) rejected claims 1, 2, and 4 under 35 U.S.C. §102(b) believing them to be anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over EP 0303438; and (6) rejected claims 3, 5-8, and 10-20 under 35 U.S.C. § 103(a) believing them to be unpatentable over EP 0303438.

Applicants respond as follows.

#### ***Status of the Claims***

Claims 1-11 and 14-20 are pending.

Claims 12, 13, and 21-53 are canceled.

By this response, claim 1 is amended, and claim 54 is added.

#### ***Rejections under 35 U.S.C. §112, second paragraph***

##### **Claims 1 to 20**

The Examiner rejected claims 1 to 20 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner believes that it is indefinite as to whether the hydrogen feedstock and high-pressure water which are heated are required to be the high-pressure feedstock and high-pressure water referred to earlier and whether the hydrogen feedstock and water which are placed into the catalytic reformer are required to be the heated and pressurized hydrogen feedstock and water. By this response, Applicants have amended claim 1 to refer to the pressurized hydrogen feedstock and the pressurized water. No new matter is introduced by these amendments. Applicants believe these amendments address the Examiner's concerns regarding these issues.

***Rejection under 35 U.S.C. § 112, first paragraph***

Claim 9

The Examiner rejected claim 9 under 35 U.S.C. §112, first paragraph, believing it to fail the enablement requirement. Specifically, the Examiner believes that the claim contains subject matter which is not described in the specification in such a way as to enable one skilled in the art to form hydrogen by reacting ammonia with water. *Office Action* p. 2.

Paragraph 28 of the Application states that “[e]xamples of feedstocks that can be used with the present invention include, but are not limited to... ammonia....” Col. 7, Lines 23-28. Additionally, ammonia is embodied in Figure 1, which illustrates two hydrogen carrier sources. Col. 4, Lines 12-16; Figure 1. The first hydrogen carrier source 16 is illustrated for water-soluble hydrogen carriers. Col. 4, Lines 12-16; Figure 1. Ammonia is a water-soluble hydrogen carrier. One skilled in the art understands that ammonia is a water-soluble hydrogen carrier. Thus, the Applicants believe that the system described in the specification clearly enables one skilled in the art to form hydrogen using ammonia as a feedstock.

For at least the reasons discussed above, Applicants respectfully submit that claim 9 meets the enablement requirement of 35 U.S.C. §112, first paragraph.

***Rejections under 35 U.S.C. § 102(b) over Eliasson***

Claims 1 and 4

The Examiner rejected claims 1 and 4 under 35 U.S.C. § 102(b) believing them to be anticipated by *Eliasson*. Specifically, the Examiner does not see a distinction between the process disclosed in *Eliasson*, and that recited in claims 1 and 4.

In order to establish a *prima facie* case of anticipation, the Examiner must show that each and every element of the claims is disclosed, either expressly or inherently, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). If a single element is not found in the prior art reference, the claims are not anticipated. Additionally, the Federal Circuit has held that “[t]o anticipate, every element and limitation of the claimed invention must be found in a single prior art reference *arranged as in the claim*.” *Brown v. 3M*, 265 F.3d 1349, 60 U.S.P.Q.2d 1375 (Fed. Cir. 2001). Thus, an invention is anticipated only when the *same device* having all the elements contained in the claim limitations is described in a single prior art reference.

Amended claim 1 recites a method of producing high pressure hydrogen on-demand comprising "pressurizing a hydrogen feedstock to at least 2,000 psi," "pressurizing water to at least 2,000 psi," and "placing the pressurized hydrogen feedstock and pressurized water into a catalytic reformer, wherein the hydrogen feedstock and water are exposed to a catalyst in the reformer."

Eliasson discloses a process for producing an H<sub>2</sub>-CO gas mixture, using a discharge reactor. Eliasson does not teach or suggest a method of producing high pressure hydrogen on-demand. Further, Eliasson does not teach or suggest a method including pressurizing a hydrogen feedstock or water to at least 2,000 psi. Eliasson discusses pressure in the reactor space 6 (FIG. 1) being only 10<sup>6</sup> Pa (approximately 145 psi). (Col. 2, lines 57-60).

For at least these reasons, applicants assert that amended claim 1 is allowable over Eliasson. Since dependent claims 2-20 depend from amended claim 1, it is believed that these claims are allowable over Eliasson.

***Rejections under 35 U.S.C. § 102(b) or §103(a) over EP 0303438***

**Claims 1, 2, and 4**

The Examiner rejected claims 1, 2, and 4 under 35 U.S.C. § 102(b) believing them to be anticipated or, alternatively under 35 U.S.C. §103(a), as obvious over EP 0303438. Specifically, the Examiner does not see a distinction between the process disclosed in EP 0303438 and that recited in claims 1, 2, and 4.

EP 0303438 discloses the production of synthesis gas from hydrocarbonaceous feedstock. The hydrocarbonaceous feedstocks are converted to a synthesis gas using a catalytic partial oxidation process. EP 0303438 does not teach or suggest a method of producing high pressure hydrogen on-demand. Further, EP 0303438 does not teach or suggest a method including pressurizing a hydrogen feedstock or water to at least 2,000 psi. EP 0303438 discusses a catalytic partial oxidation reaction carried out in reaction section 32 (FIG. 1). EP 0303438 discusses using a mixture of natural gas and steam at an inlet pressure of 2760 Kpa (approximately 400 psi), and air at an inlet pressure of 2830 Kpa (approximately 410 psi). EP 0303438 then states that pressures within the chambers 68 and 72 are maintained at these input pressures. (Col. 10, line 63, through Col. 11, line 22).

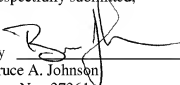
For at least these reasons, applicants assert that amended claim 1 is allowable over EP 0303438. Since dependent claims 2-20 depend from amended claim 1, it is believed that these claims are allowable over EP 0303438.

**Conclusion**

Applicants respectfully request reconsideration, allowance of the pending claims, and a timely Notice of Allowance be issued in this case. In addition, Applicants believe that this is a full and complete response to each rejection, objection, and requirement. If any item has been overlooked, Applicants respectfully request the opportunity to supplement this response. If the Examiner feels that a telephone conference would expedite the resolution of this case, the Examiner is respectfully requested to contact the undersigned.

In the course of the foregoing discussions, Applicants may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the prior art that have yet to be raised, but which may be raised in the future.

Respectfully submitted,

By   
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Date: January 12, 2009

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